NZC Building Verification

Market Analysis Summary Deck

October 2021

Lead Partner:

Laudes Foundation

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Introduction to the Market Analysis

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To meet UK's 2050 net zero targets, the built environment sector requires urgent, widespread and real decarbonisation of existing and new buildings.

UKGBC's seminal Net Zero Carbon Buildings Framework Definition built industry consensus on the steps to achieving net zero carbon buildings, providing the property and construction sectors much-needed clarity. Since its release in 2019, there has been a significant shift in the global and UK context driving up demand for net zero carbon (NZC) buildings, which is reflected in feedback received from UKGBC members and the wider industry.

Due to this, UKGBC undertook a major market analysis to better understand the market drivers, expectations and characteristics for a potential NZC buildings verification scheme in collaboration with wider industry bodies.

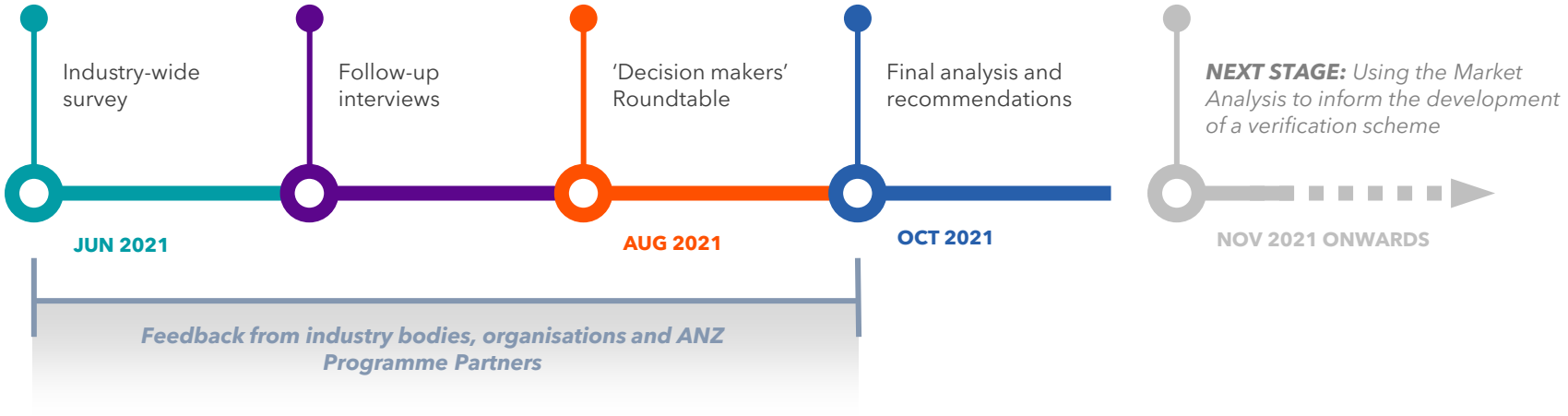
Verification will ensure robustness to net zero carbon claims and will help catalyse market-wide transformation of our built environment. It is, therefore, vital that market analysis was conducted to ensure that any potential proposal delivers an output that will *genuinely* work for the industry. The proposed recommendations resulting from this market analysis will inform the basis for discussions and next steps for UKGBC, industry collaborators and the broader industry to take forward in developing up an appropriate verification scheme.

This work was only made possible through the generous funding from UKGBC's Advancing Net Zero Programme Partners.

Objectives of the Market Analysis

The key objectives of the Market Analysis are to:

- Enable the industry to collectively understand the market drivers, expectations and characteristics for a potential net zero verification scheme
- Act as a neutral convening point, with call to industry to work collaboratively on translating the market analysis into a scheme and outcome that drives real impact in the market



Decision makers = developers, investors, asset owners, asset managers, local authorities

Market Analysis – data sources

Each stage of the market analysis built on the previous to provide additional layers and details to the considerations that a verification scheme should include.

- For example, the interview stage explored some of the key themes that came out from the industry survey responses, and the 'decision maker' workshop was designed to test some of the initial conclusions that might be drawn from the combined survey and interview analysis.

From across the built environment value chain

'Decision makers'

Decision makers = developers, investors, asset owners, asset managers, local authorities

Market analysis – specific acknowledgements

The industry survey was developed collaboratively and supported by the following trade associations, professional institutions and initiatives:

BBP BETTER BUILDINGS PARTNERSHIP

CIBSE

IStructE

LONDON ENERGY TRANSFORMATION INITIATIVE

RIBA

RICS

Broader stakeholders in the built environment value chain were also involved in the industry survey development, such as BRE and the Carbon Trust.

It is recognised that there will be other industry bodies and institutions who will want to feed into the development of the verification scheme (see slide 74).

With many thanks to the following organisations for providing their insights, expertise and feedback across the interview stage:

AECOM
Argent LLP
Arup
Aviva Investors
BAM
Bennetts Associates
Berkeley Group
Bristol City Council
Buro Happold
Carbon Intelligence
CBRE
CBRE IM
Clarion Housing
Cundall
Derwent London
Grainger Plc
Grosvenor Britain & Ireland
Igloo Regeneration
Landsec
Lendlease
Legal & General IM
Lloyds Banking Group
Marks and Spencer
Mitsubishi Electric
Overbury
NatWest Group
OGP
Peel L&P
RLAM
Rockwool Ltd
SEGRO
SOM
Tata Steel
Willmott Dixon

The Big Picture – 1/3
Desired market outcomes

Desired Market Outcomes

There were consistent themes and 'desired outcomes' that came out of the market analysis:

- ✓ It should **support mass market uptake** – this means incentivising action by **recognising that Net Zero Carbon is a journey**, and supporting users in **continuous improvement**
- ✓ It should be **framed positively** in order to achieve the desired outcomes – celebrate achievements, whilst encouraging more rapid decarbonisation
- ✓ It should **promote visibility of performance** – on an individual level, this will help users understand their performance against peers, whilst transparency will aid collective industry upskilling and knowledge sharing
- ✓ It should **eliminate greenwashing** in the market, prevent stagnation of performance improvements and remove any existing confusion as to what a Net Zero Carbon building means

These desired market outcomes should continuously be referred back to in the development of the verification scheme itself. This will help ensure that the overall impact of the scheme is not inadvertently diminished when considering micro-scale tensions, or decision making in the development process.

The Big Picture – 2/3

Key requirements for a verification scheme

Key Requirements for a Verification Scheme

There are five key requirements that arose from the market analysis. This was consistent across the various data sources, i.e. the industry survey, the follow-up interviews and the 'decision makers' workshop:

1) **A verification scheme is needed ASAP**

2) **It must be accessible – low barrier to entry**

3) **Global relevancy and compatibility**

4) **Disclosure of real-life impacts critical for credibility and impact**

5) **Independent, transparent, and with clear governance**

Similar to the desired market outcomes, these key requirements should be referred back to in the development of the verification scheme.

This will help guide the decision making process and highlight where there may be trade-offs.

1) A verification scheme is needed ASAP

The consistent message that came across in the survey, interviews and workshops was that a verification scheme is needed ASAP – and industry should not wait to have the 'perfect' scheme.

"*When do we need a net zero carbon verification scheme by?*"

10 years ago

Yesterday

ASAP!

Now

The assessment criteria to be net zero carbon is, again, likely [to] change over time based on our understanding of what is technically feasible based on technological advances.

Do not attempt to create a perfect system designed to fail.

..it's ok to start with one version of the scheme, which may be imperfect, but which has built in the ability to evolve and develop over time (with transparency of how and why changes are made etc…)

2) It must be accessible – low barrier to entry

Mass uptake is critical in achieving the desired market impact and outcome of decarbonising buildings. This means ensuring it is accessible for smaller organisations and projects

We desperately need systems that can trickle down to smaller projects. The current fee/cost of verification means only large projects can justify it.

*Please make **NZC verification accessible to all without creating an onerous and costly process** that effectively excludes small developers.*

***NZC is not static achievement**, just as the global carbon balance is not static. Aspects (like dealing with up front embodied carbon emissions) may occur at a single point in time, but **the building must continue to be operated according to the principles of NZC over time.** For this reason, [the] verification [process] must not be onerous and should align with other existing reporting schemes.*

2) It must be accessible – low barrier to entry

Mass uptake is critical in achieving the desired market impact and outcome of decarbonising buildings. This means ensuring it is also accessible to become a verifier.

*Putting the power to verify and certify into the hands of a single organisation or a small group, **will stifle innovation,** which is critical to finding ways to achieve the end goal.*

*I feel that **it should be possible to use any suitably qualified auditor to gain certification so that it is not based on any one single organisation with monopoly on NZC buildings certification.** However, the evidence that makes up the overall certification, needs to be 'approved' by those with specific qualifications*

Don't create extra costs by having limited verifiers

2) It must be accessible – low barrier to entry

Mass uptake is critical in achieving the desired market impact and outcome of decarbonising buildings. Practically, this means that:

- It should not be costly to gain net zero carbon verification
- The reporting and verification process should not be unreasonably onerous
- The process of becoming a verifier should also be accessible to prevent any single organisation having a monopoly on the market
- Where possible, the reporting should align with existing reporting requirements – **but** the use of an existing voluntary green building rating tool, reporting or disclosure scheme should not be a pre-requisite for verification.

What 'costly' or 'onerous' means in real quantifiable terms will need to be defined and tested with the market when the verification scheme is developed. It should be noted that there may be tensions between creating a scheme that is largely accessible cost-wise for the mass market, but still robust enough to ensure its credibility.

3) Global relevancy and compatibility

Mass uptake is important, but mass impact is also critical:

- Investors, developers, product manufacturers and other stakeholders operate within a global market and financial system, so a scheme that is globally relevant, or *has the capacity* to be globally compatible in future iterations will be important

Standardisation of net zero across different countries. ***The UK isn't separate from the global financial system.*** *We have investors from Europe, Asia, America, we need a standard that is recognised internationally not just nationally*

*Important to us as a manufacturer, that we are fitting with existing verification schemes wherever possible****, it is very difficult to adopt new criteria for a solution manufactured for a global market***

Needs to be flexible to ***ensure it is relevant beyond the UK*** *for organisations and tenants who have a European or global reach*

4) Disclosure of real-life impacts critical for credibility and impact

Strong emphasis that disclosure of real-life impacts – and not the design intent – are critical in ensuring the credibility of the scheme, and in its ability to drive real change.

The focus on verifying embodied CO_2 at PC and operational carbon on an annual basis with metered in-use performance data is important

Being a theoretically net zero building that actually isn't even close in reality is pretty worthless.

Must be based on actual measured performance, not design intent

Some of the certification schemes (have) become more of a tick box exercise. Net zero should require actual operational data, to show reduction from previous years

***There is a lot of 'greenwashing'** when it comes to net zero carbon building claims e.g. new builds being powered by gas, higher than required EUI, new build **NZ claims being based on design stage assessments only and not what was actually delivered.** It is impossible to accurately compare buildings based on publicly available information. The definition should be ambitious, as broad as possible **recognising the true impact, and in line with what is actually scientifically required**.*

5) Independent, transparent, and with clear Governance

Ensuring that a verification scheme, and the components that make it up, is suitably independent, transparent and has clear governance over its development, administration and implementation was seen to be critical in maintaining credibility and longevity in the market – and in mitigating risks of inadvertent impacts on real estate investment.

Any targets used must be robust and credible given the impact it will have on the market**. By credible it means **there was a suitable level of transparency, governance and oversight across the targets

*There needs to be rigor in the process; **a sensible level of governance that protects the veracity of the verification scheme.** The process needs to be well resourced and professional (effective and efficient) - not a box ticking exercise that could be tarnished and not respected.*

*..the governance must ultimately be **independent and free from commercial influence** to ensure its legitimacy.*

Governance arrangements should allow wider industry participation and engagement to provide feedback directly from participants.

The Big Picture – 3/3
Key Recommendation

Key Recommendation

Based on the five 'key requirements' as per slide 11, the core recommendation coming out of the market analysis is that:

The industry should prioritise developing a NZC Standard that can be verified against, rather than a 'green building rating tool / certification system'.

It was evident from the market analysis that the term 'Verification' had different meanings to some respondents. For clarity:

Verification
Confirmation of a claim through the provisions of objective evidence, that specific requirements have been fulfilled.

Verification is considered to be a process for evaluating a claim based on relevant data and information to determine whether the claim is materially correct and conforms to the specified requirements. It is applied to claims regarding events that have already occurred, or results that have already been obtained (confirmation of truthfulness).

Claim
Information declared by the client *(the organisation or person requesting verification)*

ISO/IEC 17029:2019 *Conformity assessment – General principles and requirements for validation and verification bodies*

Difference between Standards and Certification Systems – 1/2

The two most common interpretations of what 'verification scheme' meant to the market analysis respondents were: **a standard, that can be verified against – versus a green building rating tool, or certification system**. These are two distinct product offerings for the market and will deliver different market impacts.

	Standards (which are verified against)	Green building rating tool / certification system
Definition	Standards are agreed ways of doing something, written down as a set of precise criteria so they can be used as rules, guidelines or definitions.[1]	Rating tools are a type of building certification system that rates or rewards relative levels of compliance or performance with specific environmental goals and requirements.[2] The terms 'rating tool' and 'certification systems' are often used interchangeably.
Examples	**ISO 14064-1:2018** Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals **BS EN 15978:201** Sustainability of construction works. Assessment of environmental performance of buildings. *(often referred to for the WLC Modules)* **PAS 2060** – Carbon Neutrality (ISO standard in development) **ANSI/ASHRAE/IES Standard 90.1-2019** - Energy Standard for Buildings Except Low-Rise Residential Buildings	BREEAM, LEED, WELL Building, DGNB, EDGE, NABERS UK, Green Star, Living Building Challenge, Fitwel, Estidama, etc.

Difference between Standards and Certification Systems – 2/2

(Cont.)

	Standards (which are verified against)	Green building rating tool / certification system
Notes	**ISO is the global network of National Standards Bodies (NSB), of which there are one member per country.** In the UK, British Standard Institute (BSI) is the NSB responsible for the UK publication, in English, of international and European standards – these are prefixed as (BS EN, BS ISO or BS IEC, etc.). Publicly Available Specification (PAS) Standards also sit under BSI. In the US, the American National Standards Institute is the NSB – approved standards by its members, e.g. ASHRAE are prefixed as (ANSI/ASHRAE)	**These are typically developed by private or third sector bodies and vary in terms of their sustainability focus.** The WELL Building Standard, for example, focuses on advancing health and wellbeing in buildings through intelligent design. Conversely, LEED, DGNB and BREEAM in the USA, Germany and UK respectively have a broader sustainability remit across environmental, social, human and economic capitals. The expected performance levels vary depending on the rating systems, and are not necessary comparable even if covering similar scopes – **e.g. the requirements to comply against 'EDGE Zero Carbon' will be different to 'Living Building Challenge Zero Carbon' or 'LEED Zero Carbon'**

Rationale behind the recommendation – 1/2

	A Standard that can be verified against	Green rating tool / certification system
1) A verification scheme is needed ASAP	Can be ready to market within 9-18 months. Can form basis for sector differentiation.	Likely to take longer to develop, test and ready for market - particularly accounting for sector nuances.
2) It must be accessible – low barrier to entry	Lower cost option – for access to the standard, any related consultancy fees, and to verify against.	Current certification systems are not affordable for mass market, so a new NZC one is likely to have similar challenges.
3) Global relevancy and compatibility	Both a standard and certification system have the capacity to be compatible within a global context, but likely will have different processes and time commitments.	
4) Disclosure of real-life impacts critical for credibility and impact	Both a standard and certification System can require disclosure of real-life impacts.	
5) Independent, transparent, and with clear governance	Standards (and subsequent updates) are developed collaboratively by cross-industry representatives, and are seen as impartial. Uses third party assessment.	Certification systems can be developed collaboratively with industry, but may have vested interests which impacts its impartiality. Uses third party assessment.

Rationale behind the recommendation – 2/2

> *Standards are agreed ways of doing something, written down as a set of precise criteria so they can be used as rules, guidelines or definitions.*
>
> - British Standards Institution

A standard will provide the industry a central set of agreed criteria against which Net Zero Carbon Buildings can be verified. This will help 'cut through the noise' and help achieve the desired market outcome of eliminating greenwashing and in removing any existing confusions around what it means to be a NZC building.

There are already green certification systems that offer 'Net Zero Carbon' ratings both for the UK and international market, but as these have different criteria for what can be termed a 'NZC Building' it doesn't achieve the above desired market outcomes.

It is possible that a standard, if adopted by BSI or ISO, can be used by existing or upcoming building rating tools as a means to demonstrate that it aligns with the agreed approach and criteria for a NZC building, whilst offering them the ability to differentiate their products in the market with value add-ons, e.g. around social capitals, etc.

The ‘Smaller’ Picture – 1/3
Key industry survey results

Key industry survey results

The results of five key industry survey questions (as below) have been summarised on the following slides.

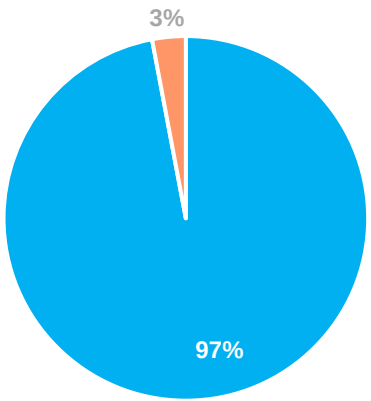
Note *however, that these are only the quantitative results from the survey and do not reflect the full market response. The qualitative responses from the survey, interviews and feedback from the 'decision makers' roundtable were critical to the analysis and in developing the recommendations.*

1. **Do you believe an industry recognised NZC Buildings Verification Scheme would be beneficial?**
2. **What of the following [scopes] should be covered by a NZC Building Verification scheme?**
3. **Should there be a correlation between NZC building verification and UK's Net Zero Target?**
4. **Should a NZC verification be absolute (e.g., pass/fail) or provide a 'scale' or acknowledgement of where buildings are on a pathway to Net Zero?**
5. **Which of the following building types [sectors] should be prioritised for the creation of a net zero verification scheme?**

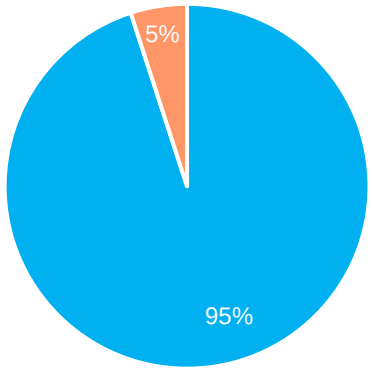
The survey questions were developed for UKGBC by a third-party consultant and the full set has been made available online. Questions were not mandatory, hence why the total number of respondents for each question were not always the same. Where appropriate, the responses from 'decision makers' – i.e. developers, investors, assets owners and managers, local and central government – were extracted to understand whether there were any significant deviations from the overall results.

1) NEED | Do you believe an industry recognised NZC Buildings Verification Scheme would be beneficial?

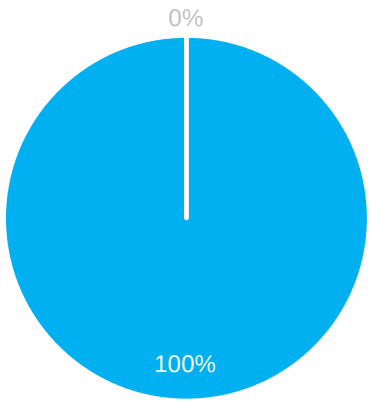
All respondents (370)



Private-sector decision makers (60)



Central gov / Local Authorities (9)



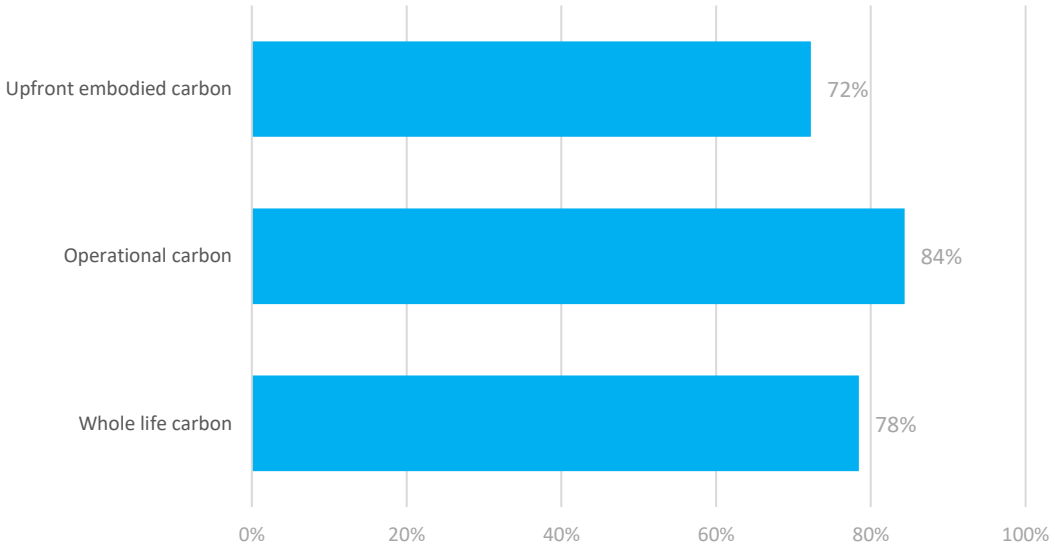
Yes

No

- The vast majority of respondents indicated 'Yes', that there is a need for an industry recognised NZC Buildings verification scheme. This remained the case when looking just at private-sector decision makers, and central / local government respondents.
- The 3% of respondents that selected 'No' responded with comments relating to: concern that it would becomes a 'tick-box' exercise for compliance, that it would not be able to cater towards the respective needs of each sector, and the suggestion that it would be better to use existing tools such as EPCs.

Private sector decision makers = developers, investors, asset owners, asset managers

2) SCOPE | What of the following should be covered by a NZC Building Verification scheme?



Options not shown: assessment of energy procurement, assessment of allowable carbon offsetting, social or economic impacts attributed to achieving NZC, Other aspects that contribute to NZC Buildings, e.g. Nature Based Solutions

- In terms of carbon scope, operational carbon received the highest selection, with 84% of total respondents indicating that it should be included within the scope. This is closely followed by whole life carbon (78%) and upfront embodied carbon (72%).
- There is similar levels of consensus when looking at just private-sector decision makers (although with a higher emphasis on upfront, rather than WLC) and central / local government respondents.
- In general, whilst the quantitative results show there is significant demand for the verification to take into account all three scopes, the open survey comments, interviews and workshop feedback provided greater insight into the level of incorporation that is desired from each of these scopes.

2) SCOPE | What of the following should be covered by a NZC Building Verification scheme?

Upfront Embodied Carbon

- **Upfront embodied carbon should be verified, but assessment should be within a WLC context to ensure informed decision making and to minimise unintended consequences**
- It was noted that upfront embodied carbon is emitted at a point in time by practical completion of the building – i.e. the adverse impacts are felt from that moment forward – so it is important that they are addressed and accounted for
- This is contrary to parts of a WLC assessment which are theoretical in nature (e.g. end of life) - *'today's carbon is more important than in 60 years'*

Operational Carbon

A weakness of the question was that it did not clearly define what 'operational carbon' covered. However, using qualitative data:

- **Operational energy consumption measurement (through energy intensity metrics) and disclosure is seen as critical in ensuring appropriate GHG abatement, and to minimise greenwashing**
- Embodied carbon relating to maintenance, repair, etc. generated diverse views on whether they should be included for verification and how. Core concerns relate to lack of available embodied carbon product data and guidance, and limited embodied 'in-use' benchmarks and targets.

Whole Life Carbon (WLC)

- **WLC Assessments are seen as essential, but concerns around market maturity and ability to verify WLC**
- In particular, verification of (rather than the assessment and disclosure of) Module C (End of Life) and Module D (Beyond life cycle)* is considered unviable given 'theoretical' nature of calculations and emissions – emissions can only be verified when they occur
- Some concern around the current market ability to consistently and accurately verify, e.g. availability of embodied carbon data for all products

**BS EN 15978 WLC Assessment Modules*

2) SCOPE | What of the following should be covered by a NZC Building Verification scheme?

Renewable Energy Procurement & Carbon Offsetting

- **In terms of balancing the 'net', there was a majority agreement that the assessment of energy procurement and allowable carbon offsetting should be covered by the verification scheme**
- The qualitative data highlighted that there was a considerable desire to minimise the potential for greenwashing
- This suggests that the balancing end of net zero carbon claims would need to be subject to a certain level of verification in order to be considered robust and credible

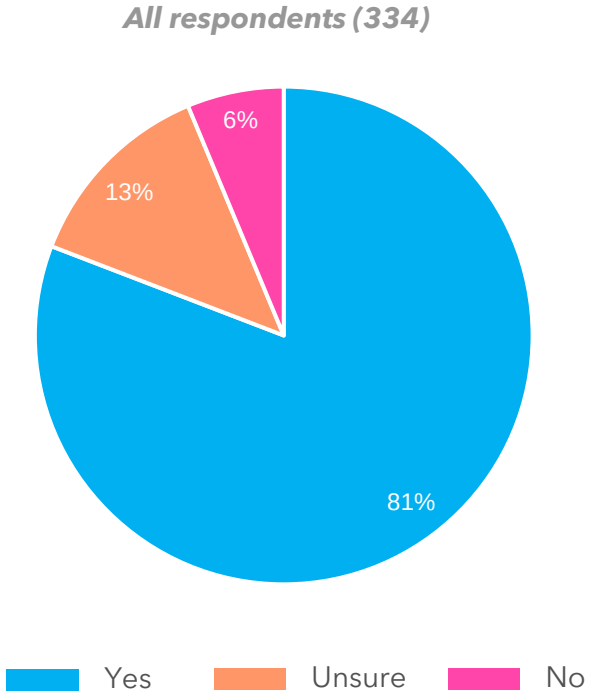
Social or economic impacts attributed to achieving net zero

- A minority of approx. 1/3 of respondents indicated that they would like to see social and economic impacts attributed to achieving net zero carbon included
- It was acknowledged that whilst these impacts are important to explore and better understand, **it does not necessarily fit within the remit of a NZC verification scheme**
- There was a desire to keep the scheme simple and focussed on NZC from a practical development, delivery and uptake perspective

Other aspects that contribute to NZC Buildings, e.g. Nature Based Solutions

- Less than 1/3 of respondents indicated that they would like other aspects that contribute to NZC buildings, such as nature based solutions (NBS) included within the verification scheme
- Comments suggested that further work in this space would be valuable, **albeit separate to the verification scheme itself**
- This could include investigating the role that NBS might play in overheating related health impacts, and for local offsetting opportunities

3) PERFORMANCE | Should there be a correlation between NZC building verification schemes and UK's Net Zero Target?



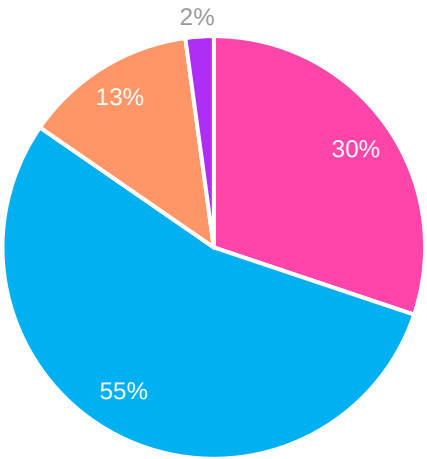
There was a strong agreement that there should be a correlation between the NZC Buildings verification scheme and the UK's Net Zero Target.

However, qualitative comments from the survey, interviews and workshop indicates that a 1.5°C aligned science-based pathway and targets would be a more appropriate baseline for the verification scheme:

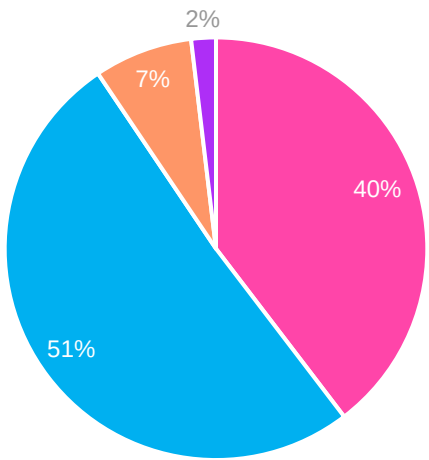
- Correlation is necessary to understand how NZC buildings can contribute towards the UK meeting its national carbon budgets. This can also potentially help alignment with future government and industry funding opportunities.
- However, there were many comments stating that the UK's NZC target is not (1) ambitious enough and lags behind industry drive, (2) subject to change for various reasons, including political influence, (3) does not provide a decarbonisation pathway specific to buildings and (4) does not include all consumption-based emissions, i.e. imported materials
- **Science based targets should be used – although further clarity is required to understand what 1.5°C aligned pathway should be used (e.g. global, national, regional, sector-based, organisational-level) and how it can appropriately be translated down to a building level standard whilst still maintaining the potential to be globally compatible**

4) STRUCTURE | Should a NZC verification be absolute (e.g., pass/fail) or provide a 'scale' or acknowledgement of where buildings are on a pathway to Net Zero Carbon?

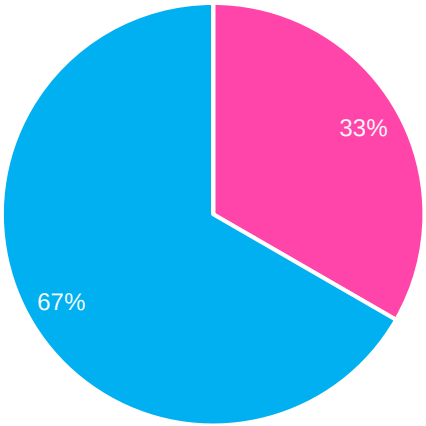
All respondents (325)



Private sector decision makers (53)



Central / Local Government (6)



Absolute

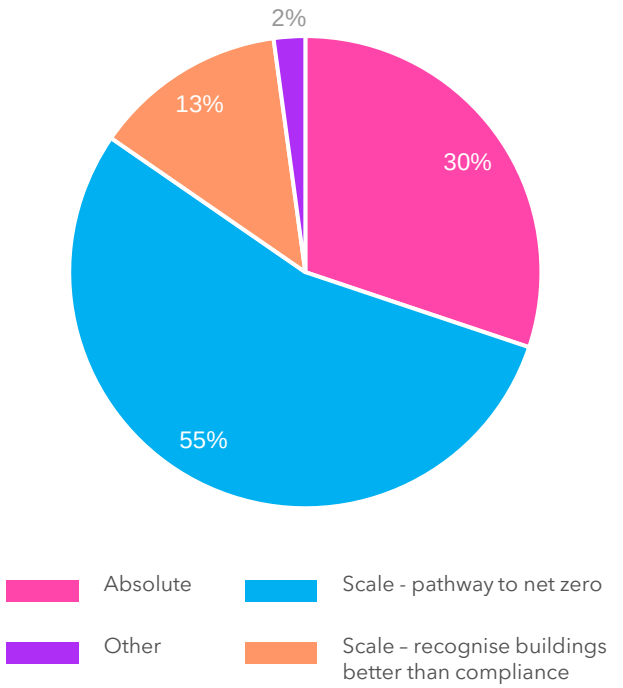
Scale - pathway to net zero

Other

Scale – recognise buildings better than compliance

4) STRUCTURE | Should a NZC verification be absolute (e.g., pass/fail) or provide a 'scale' or acknowledgement of where buildings are on a pathway to Net Zero Carbon?

All respondents (325)



There was a slight majority (54%) for recognising buildings that are on a pathway to NZC, but a considerable minority (30%) selected that NZC should be absolute.

- The gap between the two choices decreases when only considering private-sector decision makers (51% and 40% respectively), but widens when only taking central / local government into account (67% to 33%, albeit with small absolute numbers)

The rationale behind supporting a scale that recognises a pathway to NZC was:

1. To ensure wide uptake across all sectors and buildings types – NZC is a journey
2. To provide a positive framing to enable and incentivise longer term investment strategies, highlighting improvements required to progress towards NZC
3. To understand the level of performance the building has achieved, or it is currently at – helps industry upskilling and knowledge sharing

The rationale behind supporting an 'absolute' approach was:

1. That the achievement (and claims) of NZC itself should fundamentally be binary
2. It stops the watering down of standard and ambitions – concern that allowance of NZC claims on the pathway may disincentivise some from going further and permit 'greenwashing'

5) SECTORS | Which of the following building types should be prioritised for the creation of a net zero verification scheme?

	All respondents
1	Residential (244) Offices (244)
3	Education (144)

	Private-sector decision makers
1	Residential (39)
2	Offices (37)
3	Logistics / Warehouse (17)

Top 3 selection from: Education, Healthcare, Hospitality, Logistics / Warehouse, Offices, Residential, Retail, Other

Residential and Offices were considered the highest priority, with slight prioritisation given to residential when considering just private-sector decision makers.

- Education came third overall, with Healthcare, Logistics / Warehouse and Retail following with a similar level of selection. Hospitality was overall considered lowest priority (beyond 'Other').
- The residential sector was often referred to as the critical sector to decarbonise, particularly around the challenge of retrofitting the existing building stock. It was highlighted that the residential sector will require specific consideration, as the demand drivers for net zero carbon buildings differ to that of the commercial sector, and do not exist yet at scale. Data collection is seen as a major blocker, due to GDPR concerns, and financing models for new build can create challenges around the ownership and influence boundaries of emissions under the principle 'Polluter Pays'.

The ‘Smaller’ Picture – 2/3

What a NZC Standard should cover

What a NZC Standard should cover – 1/5

Based on the market analysis, the core elements that a standard should cover within its documentation, or in relation to its operationalisation of the standard in the market are:

A. Consistency in claims

1. Definition
2. Scope
3. Applicability
4. Boundary
5. Terminology

B. Credibility of claims

6. Performance requirements
7. Management of residual emissions
8. Measuring of impacts

C. Assurance of claims

9. Reporting
10. Disclosure
11. Verification

What a NZC Standard should cover – 2/5

A. Consistency in claims

1. Definition	• The defined routes for Net Zero Carbon claims
2. Scope	• What EN 15978 WLC Modules the definition covers
3. Applicability	• What type of buildings the definition applies to, e.g. new build
4. Boundary	• The physical boundaries of the claims, what building areas it relates to
5. Terminology	• What you can claim, and how it can be communicated

What a NZC Standard should cover – 3/5

B. Credibility of claims

6. Performance requirements	• What the operational, embodied and WLC assessment and performance requirements are, including any carbon budget or targets
7. Management of residual emissions	• What the acceptable management and 'netting' of residual emission are, i.e. procurement of renewable energy and carbon offsetting standards
8. Measuring of impacts	• When and how the design and real-life impacts should be measured, including how to deal with varying quality of data, or gaps in data, and what emission factors should be should.

What a NZC Standard should cover – 4/5

C. Assurance of claims

9. Reporting	• What information is required to be reported and in what format
10. Disclosure	• What level of public disclosure is required and where it is disclosed to
11. Verification	• Who can verify claims, and frequency of verification and auditing required for compliance with the standard

What a NZC Standard should cover – 5/5

Independent, Transparent and Clear Governance

A. Consistency in claims	B. Credibility of claims	C. Assurance of claims
1. Definition	6. Performance requirements	9. Reporting
2. Scope	7. Management of residual emissions	10. Disclosure
3. Applicability	8. Measuring of impacts	11. Verification
4. Boundary		
5. Terminology		

Including management plan for how the standard will be updated in line with industry understanding and technological advancements

The ‘Smaller’ Picture – 3/3

Translating the market analysis into potential routes forward

NZC Definition, Scope and Applicability

Translating the market analysis into potential routes – 1/11

A. Consistency in claims | **1. Definition** | **2. Scope** | **3. Applicability**

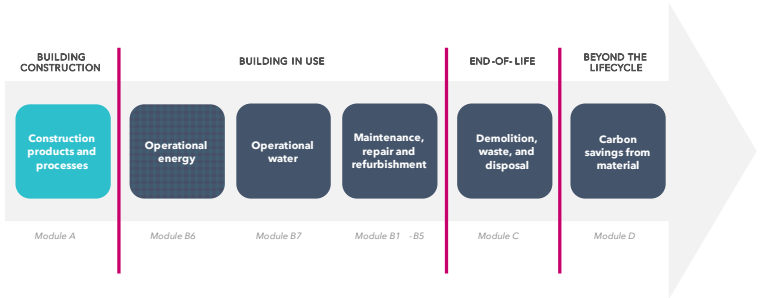
The market analysis suggests that:

- **Construction (upfront embodied carbon)** and **building operational carbon** should be treated separately
- They should nonetheless be considered within a **Whole Life Carbon Assessment** lens, to ensure that there are no unintended consequences in design, construction or operation
- The **BS EN 15978:201 Whole Life Carbon Assessment modules should be used** to support consistent terminology in describing what scopes of carbon is being considered within design, construction, measurement and assessment
- A Whole Life Carbon 'definition' was deemed currently unviable in the context of verification – due to inability to verify (rather than assess) Module C (End of Life) and Module D (Beyond life cycle) carbon, given the theoretical nature of the figures – i.e. can't verify pollution (or lack of) until it happens

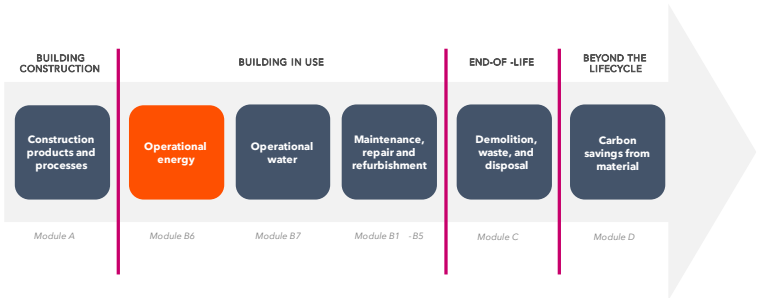
Translating the market analysis into potential routes – 2/11

What this suggests practically is that **there should be <u>two</u> initial 'Net Zero Carbon' definitions:**

1 **NZC – Construction**
Module A, with B6* design requirements



2 **NZC – Operational Energy**
Module B6



This means that the communication and marketing guidance around the standard must be very clear to ensure that:

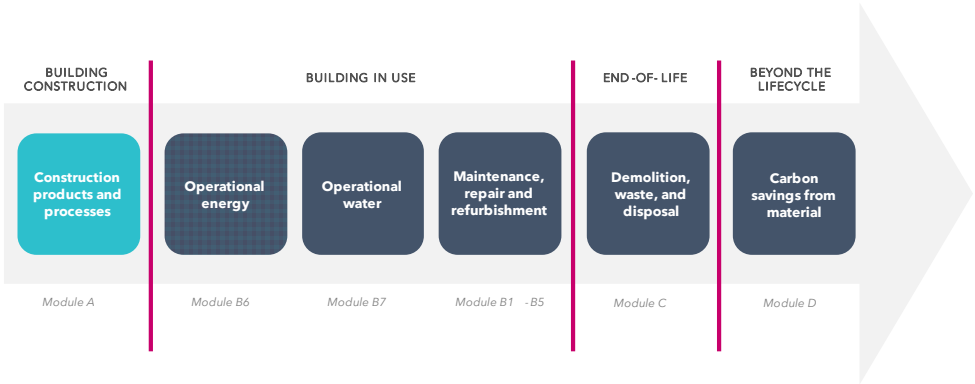
- Consistent terminologies are used, so there is no confusion as to what NZC definition or scope the buildings has achieved
- This will be particularly important if there is a visual 'certificate' of sorts developed

BS EN 15978:201 Whole Life Carbon Assessment Modules
**Refer to slide 47 on how this might evolve*

Definition 1: NZC Construction

Also referred to as 'NZC Enabled' or 'NZC Ready'

Definition	**NZC – Construction**
Scope	**Module A** as built construction products and processes + **B6 Operational energy design requirements**
Applicability	**For all new, renovated or fit-out buildings** regardless of whether building ownership transfers after completion of works



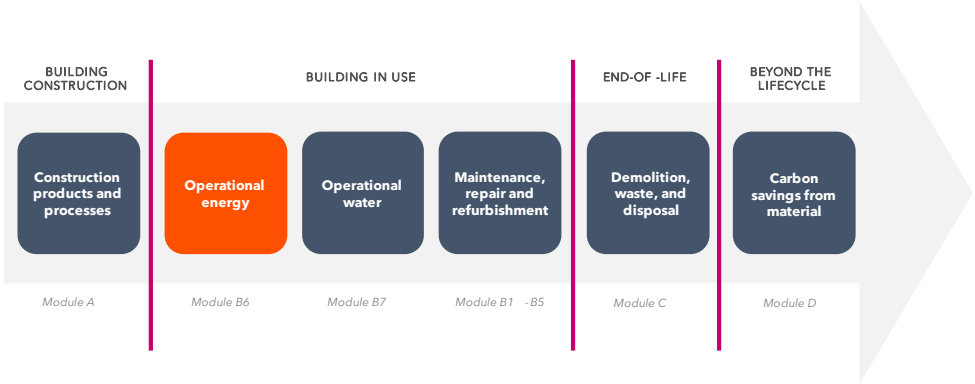
Definition 1 relates to measuring, accounting and verifying the upfront embodied carbon as built – but critically it should also demonstrate that it has been designed to specific requirements (e.g. choice of heating systems) to ensure that it meets expected performance standards in operation (e.g. modelled EUIs, peak demand, etc.).

This has often informally been referred to as ***'NZC Enabled'*** or ***'NZC Ready'*** as a means to highlight and communicate that the 'client' has not just accounted for its construction impacts, but has ensured that the building is designed to a level that allows it be compatible with a NZC economy.

Moving forward, it is suggested that greater clarity is provided around the communication of this definition. This includes discussing whether there is a more appropriate name for the definition, in order to capitalise on the 'marketable' angle of having a building that is 'NZC Enabled or Ready' – and precisely what the design requirements are.

Definition 2: NZC Operational Energy

Definition	**NZC – Operational Energy**
Scope	**Module B6 – Operational Energy**
Applicability	**For all buildings in operation**



Definition 2 relates to measuring, accounting and verifying the operational energy and resultant carbon.

The market analysis indicated that this was the preferred 'starting' scope for buildings in operation, but with the expectation that the definition and scope would evolve in the future – i.e. to eventually take into account operational water (Module B7) and then later all maintenance, repair and refurbishment works (Module B1-B5).

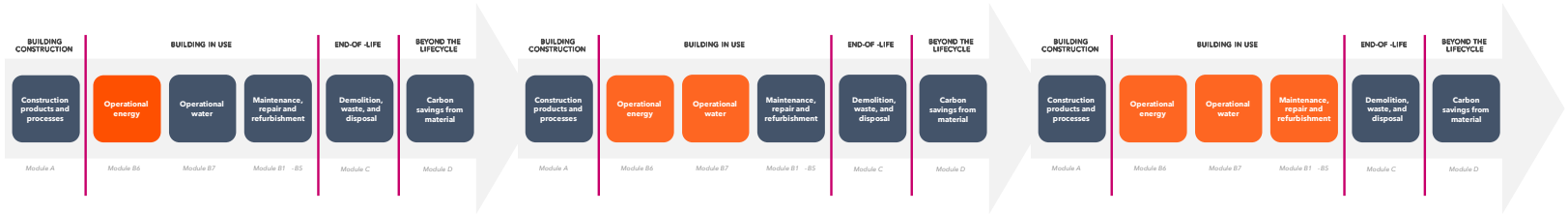
This potential evolution into 'NZC – In Use Carbon' (see next slide) would combine both embodied and operational carbon. This would entail increased complexity in many areas of the standard, including the consideration of when reporting timeframes for Module B1-B5 Maintenance, etc. should be to support strategic investment cycles for upgrades, maintenance, etc. This is likely to conflict with the reporting timeframes for Module B6 Operational Energy which the market analysis indicated should take place on an annual basis.

Potential Evolution of Definition 2

Potential evolution of Definition 2

Definition	**NZC – Operational Energy**	**NZC – Operational Carbon**	**NZC – 'In-Use' Carbon**
Scope	**Module B6** Operational Energy	**Module B6 + B7** Operational Energy and Water	**Module B** All 'In-use'
Applicability	**For all buildings in operation**		

Illustrative overview of how the definition for NZC – Operational Energy may evolve moving forward



Translating the market analysis into potential routes – 3/11

A. Consistency in claims | **1. Definition** | **2. Scope** | **3. Applicability**

The market analysis also suggested that:

For new, renovated buildings or fit-outs where ownership is <u>retained</u> following completion of works:

NZC – Construction
Module A, with B6* design requirements

+

NZC – Operational Energy
Module B6

- The standard should explore whether these two definitions can be formally linked
- This stems from the desire to shift more towards a WLC lens, but also to mitigate the risks of disconnect between design intent and real-life impacts

NZC Boundaries

Translating the market analysis into potential routes – 4/11

A. Consistency in claims → **4. Boundary**

The market analysis indicated that there was a majority desire to verify on (1) building scale, (2) portfolio scale, and (3) landlord/tenant split:

NZC Definition	Applicability	Desired Boundaries
1. Net Zero Carbon – Operational Energy > Operational Carbon > In Use Carbon	All buildings	• Base building • Whole building • Tenant area • Portfolios (base or whole buildings)
2. Net Zero Carbon – Construction *Also referred to as 'NZC Enabled'*	New & Refurb	• Whole building
	Fit Outs	• Whole building • Tenant area

Further boundaries considerations

There are additional complexities when considering NZC claims on a portfolio level, or across the landlord/tenant split:

Portfolios:

- Respondents felt that there should be an acknowledgement that certain building stock will be more challenging to decarbonise for broader sustainability reasons – for example, heritage and historical buildings
- It was suggested that allowing net zero claims on a portfolio (or fund) level will provide the necessary flexibility to deliver organisational level decarbonisation strategies by allowing performance shortfalls by certain buildings to be 'made up' in other buildings that are capable of 'going further'
- This raises questions around the terminology and applicability of claims which would need to be explored in further detail – for example, if a building in the portfolio changes ownership, what claims can be made on a building and portfolio level, and by whom

Tenant / Landlord:

- Data accessibility is seen as a significant challenge that would need to be overcome – particularly for the residential sector
- The standard should set out clear, consistent guidance on how to deal with any data gaps, what the minimum expected data quality is for any net zero carbon claims, and how this is expected to improve over time

NZC Terminology

Translating the market analysis into potential routes – 5/11

A. Consistency in claims → **5. Terminology**

The terminology of what can claim Net Zero Carbon will be critical for the marketing and communication of the achievements, supporting like-for-like comparison, and minimising risks of greenwashing in the market.

- The survey results (slide 32) suggest that this is an area of contention, with feedback from the interviews and workshop confirming that the results can be interpreted in more than one way
- This complexity increases when considered in the context of the fact that there is a market desire to treat construction, i.e. upfront embodied carbon, separately to operational carbon

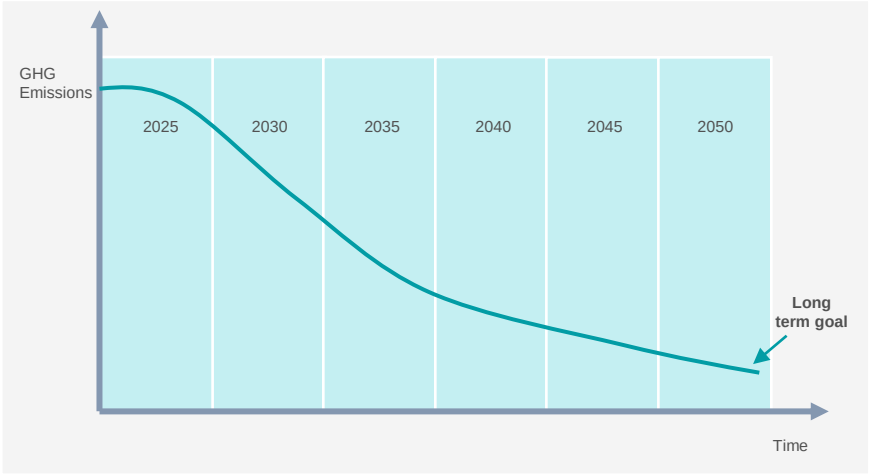
This market analysis does not make a specific recommendation around the terminology of claims, but instead presents the most feasible interpretations that felt most representative of the data received.

- This will need to be explored in further detail and tested on the market at the next stage, i.e. in the development of the standard

Definition 1: Net Zero Carbon - Construction

The market analysis results can be interpreted in the following ways:

Definition	NZC – Construction
Terminology	*Buildings can claim '**Net Zero Carbon**' if they meet **the 1.5°C science-based requirements for that set timeframe***



Illustrative only – residual carbon would also need to be accounted for net zero balance

The rationale behind this interpretation is:

- Upfront embodied carbon is emitted at a set point in time, i.e. in construction, and cannot be 'later improved' on such as in operational energy and carbon
- A science-based trajectory can provide a 'carbon budget' for set timeframes, e.g. every 5 years – this would allow sufficient time for construction / refurb planning

The alternative interpretation is to hold buildings to the 2050 (or 'long term goal') requirements, however:

- This was not seen as realistic as current construction methods and technologies do not yet support this level of performance
- Doing so would likely limit the market penetration of the standard and deter action – this would go against the desired market impacts (slide 9)

Definition 1: Net Zero Carbon - Construction

(Cont.)

Definition	**NZC – Construction**
Terminology	*Buildings can claim '**Net Zero Carbon**' if they meet **the 1.5°C science-based requirements for that set timeframe***
Notes	From a marketing perspective, there can be a further 'tier' to recognise buildings that have fallen short of meeting the requirements for that timeframe, but can still demonstrate reasonable progress. This could help with delivering the desired market outcomes (slide 9) of encouraging continuous improvements through celebrating achievements.

There are several challenges:

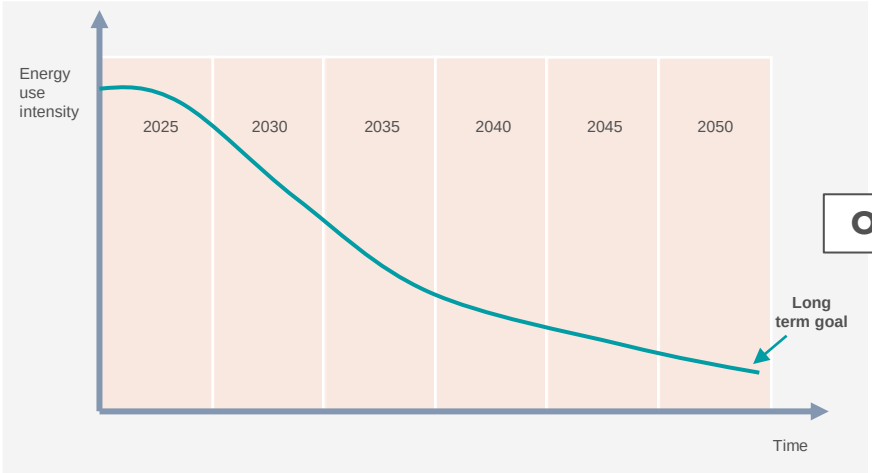
- Sciened based carbon budgets do not currently exist – they would need to be developed as soon as possible*, or the standard would need to outline what the benchmarks and disclosure expectations are until they are available
- Some level of flexibility is required, given limited industry experience currently in measuring embodied carbon consistently
- Potential misalignment with the 'Net Zero Carbon – Operational Energy' terminology of claims (see next slides)

**UKGBC's Whole Life Carbon Roadmap* provides the built environment a 1.5°C-aligned carbon trajectory from which science-based targets, or 'budgets', could feasibly be derived*

Definition 2: Net Zero Carbon – Operational Energy

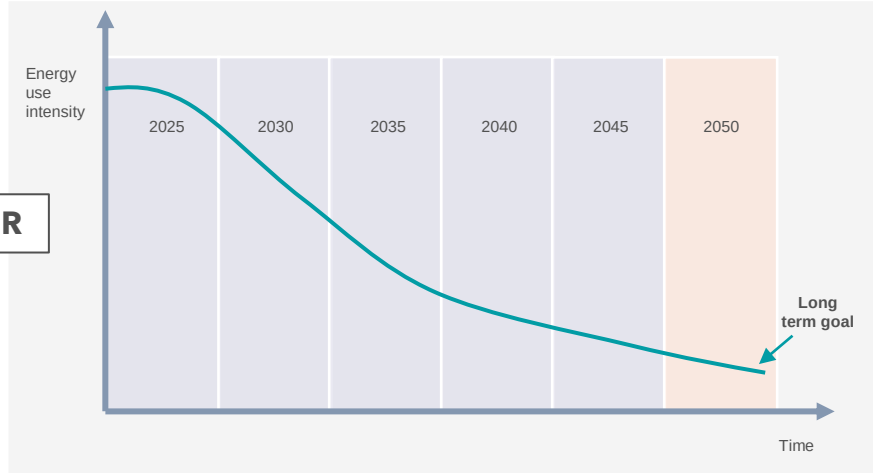
The market analysis results can be interpreted in the following two ways:

Definition	NZC – Operational Energy
Terminology	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for that set timeframe***



OR

Definition	NZC – Operational Energy
Terminology	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for the 'long term goal'***



Illustrative only – residual carbon would also need to be accounted for net zero balance

Definition 2: Net Zero Carbon – Operational Energy

(Cont.)

Definition	**NZC – Operational Energy**	**Definition**	**NZC – Operational Energy**
Terminology	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for that set timeframe***	**Terminology**	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for the 'long term goal'***
		OR	
Notes	There can be a further tier to recognise buildings that have fallen short of meeting the requirements for that timeframe, but can still demonstrate reasonable progress. The terminology would need to be clear that it is not considered Net Zero Carbon. Similarly, there can be recognition for buildings that achieve the science-based requirements for later timeframes, e.g. 2035 requirements in 2025	**Notes**	Buildings that meet the 1.5°C science-based requirements for earlier timeframes would need to have a separate terminology, e.g.: • ***Pathway to Net Zero Carbon*** • ***Transitional Net Zero Carbon (20XX)*** There can be a further tier to recognise buildings that have fallen short of meeting the requirements for specific timeframes, but can still demonstrate reasonable progress.

Definition 2: Net Zero Carbon – Operational Energy

There are advantages and disadvantages to both interpretations – below are some key points:

Definition	NZC – Operational Energy
Terminology	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for that set timeframe***

Advantages:

- More likely to support mass market uptake, as the challenge does not seem as 'unsurmountable' for clients
- Celebrates milestone achievements, which provides additional marketing opportunities

Disadvantages:

- More difficult to compare like-for-like, as a NZC building in 2025 has different requirements to a NZC building in 2035
- May not provide the clarity desired from the market on what a net zero carbon building is

Definition	NZC – Operational Energy
Terminology	*Buildings can claim **'Net Zero Carbon'** if they meet **the 1.5°C science-based requirements for the 'long term goal'***

Advantages:

- Mitigates risks of greenwashing, as net zero carbon can only be claimed at set 'end point' which must then be maintained
- Aligned with Race to Zero campaign of achieving 'net zero carbon' as a region, city or business by a set date, i.e. latest 2050

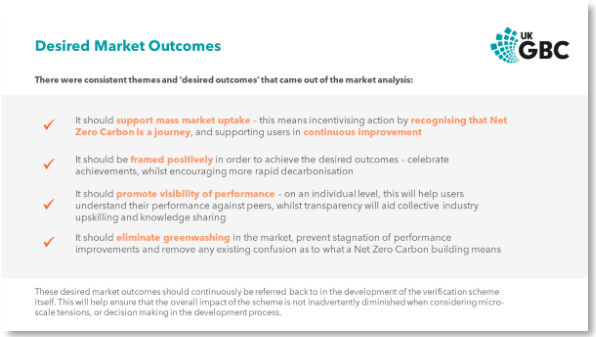
Disadvantages:

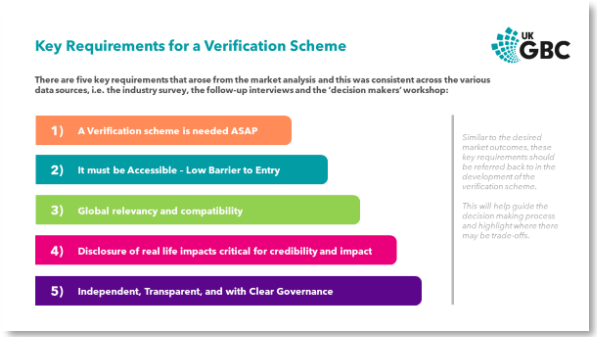
- May be considered 'less achievable' for clients and deter action
- This would be a different approach to the 'Net Zero Carbon – Construction' interpretation, which would add complexities to the terminology of claims

Terminology of what can claim Net Zero Carbon

This market analysis does not provide a specific recommendation for which interpretation to take forward:

- Both interpretations are considered feasible options for NZC - Operational Energy (compared to for NZC – Construction)
- How the standard and NZC claims are positioned and marketed will have a significant impact on its market penetration and uptake – e.g. the precise wordings, whether 'tiers' of performance are recognised, and if so, how should they be framed?
- These interpretations will need to be explored in more detail and tested at the next stage – it is highly recommended that the ***desired market outcomes*** *(slide 9) and* ***key requirements*** *(slide 11)* are referred back to during the development of the standard to help guide the decision-making
- This will include discussing whether the same approach should be taken for the two NZC Definitions





Credibility of Claims

Translating the market analysis into potential routes – 6/11

B. Credibility of Claim

6. Performance Requirements

Clearly setting out the performance requirements will be necessary to ensure credible net zero carbon building claims, and differentiate from claims of carbon neutrality. The market analysis suggests that:

- Performance targets should be aligned with a 1.5°C science-based trajectory
- Given the significant impact that any operational energy, water or embodied carbon targets will have on the market, it will be important to ensure that they are robust, credible and with a suitable level of transparency and governance
- However, it is recognised that targets will not necessarily be available for all sectors, or for all scales of impacts (e.g. major vs minor refurb) in the short-term – as a result, the standard should outline how these sectors can reasonably demonstrate compliance in these situations, including if there are any exceptions
- Similarly, it is also acknowledged that performance targets may evolve to reflect changes in the scale of carbon abatement that is deemed technologically feasible for that time period, or in relation to how the UK built environment is decarbonising. The standard should signpost how and when the standard may be updated to reflect these changes to allow clients sufficient transition time

Translating the market analysis into potential routes – 7/11

B. Credibility of Claim

7. Management of Residual Emissions

There was a majority consensus the procurement of renewable energy and carbon offsetting should be verified as part of net zero carbon claims. The market analysis suggested that:

- The standard will need to set out clear expectations of allowable 'netting' of carbon, and how this will or might evolve in the future. For example, what type of carbon offsets are allowable, whether there should there be a minimum carbon price, etc.
- A key challenge will be to explore how organisational-level, or portfolio-level procurement or offsetting strategies can be reconciled with net zero carbon on a building scale

Translating the market analysis into potential routes – 8/11

B. Credibility of Claim

8. Measuring of impacts

A key challenge will be to ensure consistency of when and how design and real-life impacts are measured:

- Whole Life Carbon assessments are seen as critical in mitigating the risks of unintended consequences, and in embedding net zero carbon requirements earlier on in the project process and lifecycle
- The standard should provide a consistent methodology and set of assumptions in measuring impact to ensure comparability in design, as-built and in use performance – for example, what the emission factors hierarchy should be, the minimum level of data and quality of data and the approach when extrapolations, or estimations are necessary
- It should also acknowledge the key interfaces with stakeholders, and when design data is limited to minimise the performance gap (e.g. supply chain data at RIBA Stage 4)

Assurance of claims

Translating the market analysis into potential routes – 9/11

C. Assurance of Claims

9. Reporting

The assurance of claims is integral to robust claims of NZC, and to minimise the potential of greenwashing in the market. The market analysis suggests that

- Reporting should not be onerous – a template should clearly outline the expected format and level of information that is required
- Reporting for verification should occur at the below frequencies and timescales:

Definition	Applicability	Verification
1. Net Zero Carbon – Operational Energy	All buildings	• Annually, in use data
2. Net Zero Carbon – Construction	New & Refurb, Fit outs	• RIBA Stage 4 (Pre-Tender) • Practical Completion, based on as-built

- Data underpinning the reporting should be held in a format which supports easy transfer of information when the building ownership changes, or to support refurbishments, etc.

Translating the market analysis into potential routes – 10/11

C. Assurance of Claims

10. Disclosure

The market analysis suggests that a level of public disclosure should be mandated to support transparency and accountability of net zero claims, and to also support industry knowledge sharing and upskilling

- The level of information to disclose would need to be agreed in the development of the standard, as it is recognised that there can be data sensitivity and GDPR issues in linking data to individual buildings (e.g. residential, data centres, etc.)

There are a number of other areas for further discussion, but it is acknowledged that this may sit beyond the standard's remit and relate more to the operationalisation of the standard:

- There is support for public disclosure to a central third-party website, e.g. a government portal or a portal that is co-owned by industry bodies – this would allow aggregation, or anonymisation of the results under categories, but it is recognised that this would require formal operation and maintenance by a specific entity or entities – questions as to who this might be / who would be suitable

- There also needs to be further discussion on how to reconcile data privacy with market drivers supporting greater uptake, e.g. would there be value in having a searchable database on individual building levels akin to EPC ratings?

Translating the market analysis into potential routes – 11/11

C. Assurance of Claims

11. Verification

The market analysis highlighted that impartiality and transparency was considered key in ensuring a reasonable level of trust in the verification process:

- There was a majority preference for verification to be undertaken by approved bodies (rather than by consultants, or self-verification) – as it was felt this would offer the greatest level of credibility and consistency in the verification process
- Much of the detail will relate to the *operational implementation* of the standard, rather than the standard itself – for example, how 'approved bodies' are defined, what a 'suitably qualified' assessor is, how they might become one, what level of auditing is required, etc.
- There is a concern however around (1) how accessible this route would be for smaller clients / projects, and (2) whether this would result in an inadequately small pool of bodies/assessors – i.e. not enough assessors to serve the market at the speed and volume desired

How does this relate to UKGBC and broader commitments?

How does this relate to UKGBC?

The market analysis was conducted as a standalone exercise – this was to ensure that it appropriately captured the fundamental drivers and needs behind the desire for net zero carbon verification scheme.

- For this reason, the industry survey, interviews and workshop all returned to 'basic' questions around what scope the verification scheme / standard should cover, the terminologies around net zero carbon, when verification should occur, etc. – with the survey development and interviews conducted by a third-party consultant
- However, given that UKGBC's Net Zero Carbon Buildings Framework Definition is being actively used by industry, there were understandably questions around what this market analysis means for the guidance now, and in the future:

Net Zero Carbon Building Framework Definition

- The market analysis has not presented any significant findings that conflict with the Framework Definition
- Most notably, the proposed definitions and scopes of net zero carbon are the same
- Clients using the Framework Definition currently do not need to be concerned – it will remain 'business as usual' for them
- The next step of this market analysis is to take its recommendations and findings and translate this into a NZC standard that can be verified against – during the development of this standard, if there are any considerable departures from the Framework Definition, this will be communicated with the industry and a plan will be developed to ensure a smooth transition for clients using the Framework Definition onto the new standard

How does this relate to broader commitments?

It is recognised that businesses have a key role to play in the net zero transition, and many have demonstrated leadership by setting and delivering against ambitious climate commitments on an organisational level.

- The Race to Zero campaign has seen many businesses commit to achieving net zero carbon emissions by 2050 at the latest, and this is often supported through third-party commitments, as highlighted on UKGBC's Climate Commitment Platform
- These third-party commitments include, but are not limited to: WGBC's Net Zero Carbon Buildings Commitment, Science Based Targets, Better Buildings Partnership Climate Commitment, EP100, RE100, etc.
- All organisational-level commitments will relate to the business' buildings strategy, which in turn will relate to the new net zero carbon standard / verification scheme – as such, it's important that:
    - The development of the standard allows appropriate input from across the value chain, to ensure that the resulting standard is applicable, has real-life relevancy and ultimately delivers the desired market outcomes
    - During the consultation stage of the standard development, there will need to be adequate testing of the standard to understand how it relates to different building scenarios (e.g. sectors, tenure types, etc.) but also to understand whether there are any significant conflicts with key third-party organisational commitments

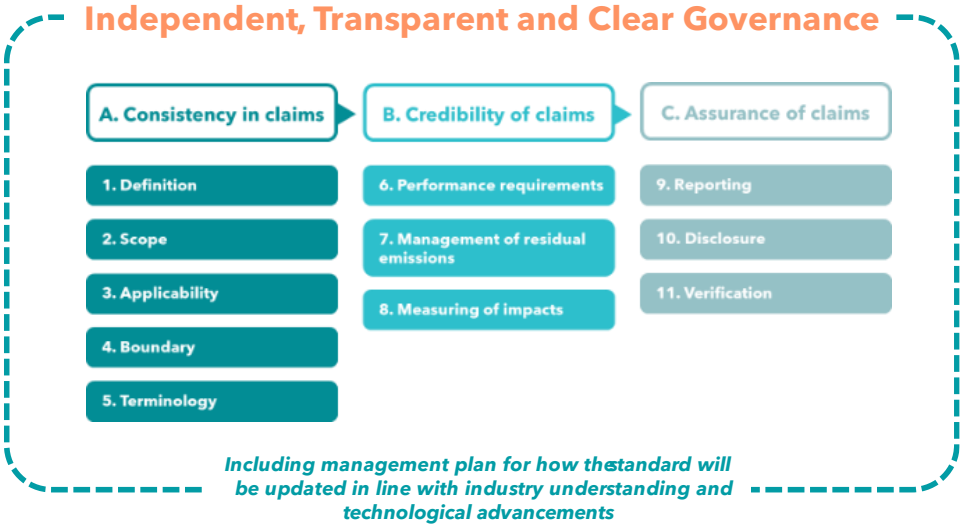
Conclusions & Next Steps

inc. how to get involved

Key conclusions

The industry should prioritise developing a NZC Standard that can be verified against, rather than a certification rating tool

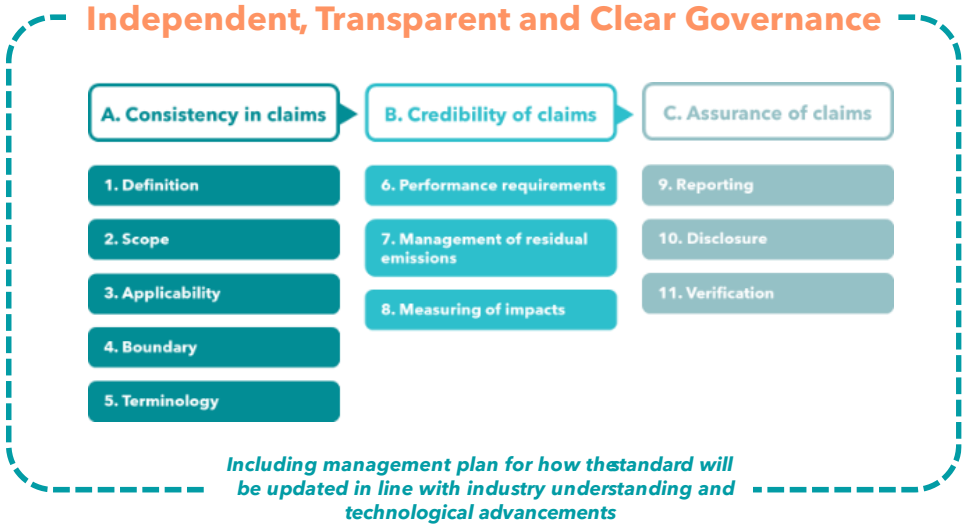
- This allows a faster, and more accessible route to market
- It will 'cut through the noise' and eliminate confusion as it will offer the market a central, credible point for what it means to be a net zero carbon building
- The residential sector will need specific consideration, as the drivers, motivations and stakeholders involved differ to that of the commercial sector
- There are many uncertainties and areas that will need to be worked through: e.g. the lack of all sector-based targets, etc., so the standard will need to have an appropriate management plan for evolving and adapting with industry advancements



Next Steps

UKGBC and industry collaborators are committed to seeing the standard come to fruition, and for the market analysis to form the initial basis for discussion. UKGBC are currently:

- In discussion with BSI representatives around the potential for a new British Standard for Net Zero Carbon Real Assets
- Collaborating with other industry bodies and organisations who are developing rating tools, databases, or guidance that relate to net zero carbon buildings to help support a joined up effort across industry



Next steps – for you

Industry bodies, institutions or initiatives:

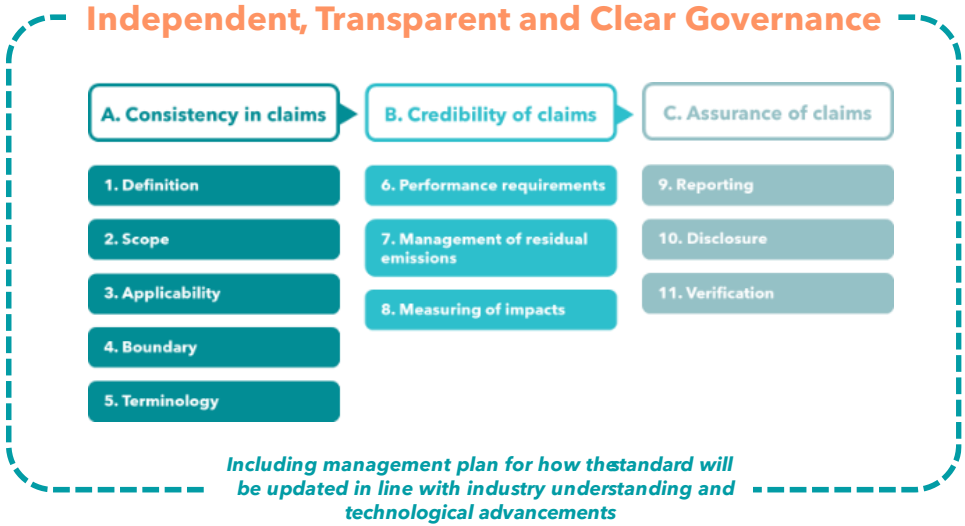
- Please get in touch if you are interested in engaging with the development of the standard moving forward

Private and public sector stakeholders

- Stay up to date by joining our mailing list – this will flag when and how to get involved, e.g. consultations, etc.
- Share your thoughts on the market analysis findings, and how this relates to your own area of work

Organisations creating their own low / zero carbon certifications, tools or guidance

- Please get in touch to share and discuss, so we can help support greater alignment across industry



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Thank you

This slide deck is an output from the UKGBC Advancing Net Zero Programme. UKGBC would like to sincerely thank all survey respondents, interviewees, workshop attendees, industry bodies and organisations and the ANZ Partnership for their feedback, assistance and contributions over the development of this output.

We welcome input from any interested stakeholders from across the building value chain on the content of this slide deck. If you have any questions on this output, or would like to provide feedback, please email ANZ@ukgbc.org.

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